



Aerospace Education

November-December 2005

News

Inspiring Students To Excel

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If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@cap.gov.

Brewer Award Goes to the Best of the Best

The Brewer Family has supported and encouraged aerospace education since 1943. Civil Air Patrol has the honor of presenting the Brewer Award annually in four categories at both the regional and national level.

Established on 31 December 1959, the Brewer Award serves as a memorial to Mr. Frank G. Brewer, Sr., a civic-minded businessman and patriotic citizen who recognized the importance of aerospace education to our country. This prestigious award recognizes individuals and organizations that have made outstanding contributions to the

advancement of youth in aerospace education.

This award is typically presented at the CAP National Board Meeting held in August. The deadline for applications to be submitted is 15 January. For more information on criteria and application form, see CAPP 15 or go to the AE website at www.cap.gov/ae and click on the Grants and Awards button. CAP thanks the Brewer Family for continuing this tradition of excellence in recognizing those that, out of selfless devotion, give their time and effort to inspiring youth in aerospace education.

The four categories for this award are:

Category I - Civil Air Patrol Cadet Member

Category II - Civil Air Patrol Senior Member

Category III - Individual or Organization outside of Civil Air Patrol

Category IV - Lifetime Achievement



Frank G. Brewer, Sr.



Frank G. Brewer, Jr.



Partner: Ken Cook Co. and NCAE

Enthusiasm and devotion describe Kenneth J. Cook's dedication to aerospace education. Cook is president of the National Coalition for Aviation Education (NCAE). He leads over 50 organizations and associations who recognize the importance of aviation and space education. "Ken has helped tremendously in moving NCAE to the next level and has increased service to its members

"Ken has helped tremendously in moving NCAE to the next level and has increased service to its members and the nation"



and the nation," said Rol Murrow, executive director of the Wolf Aviation Fund. NCAE members include CAP, FAA, NASA, Wolf Aviation Fund, AOPA, Ken Cook Co. and many others.

Ken Cook Co. was established in 1944 by Cook's father, Aviator Kenneth A. Cook. Kenneth J. Cook is now president, CEO, and Chairman of Ken Cook Co. He leads a staff of over 90 professionals in Milwaukee, WI. The company is a single-source provider of product information and training programs for manufacturers and businesses. Product information is published in print and all media formats including video, CD, DVD and web based. Clients include Volvo, Caterpillar, Deere, Ingersoll-Rand and Raytheon Aircraft.

As a supporting member of NCAE, the company provides educational materials and handouts for NCAE for use in exhibits and other events. Ken Cook Co. helps in planning and sponsoring several events dedicated to aviation and space education.

In September 2005, NCAE hosted the first Leadership Conference on Aviation and Space Education (LCASE). Ken Cook Co. was a major sponsor for the conference and Cook, along with members of his staff, were on the planning committee. The company used its resources to design and produce the signs, banners, programs, and other materials for the conference. "We are all impressed with Ken's genial leadership style and his significant commitment of time and resources supporting

this important work," said Murrow.

The theme of the conference was: Aerospace Education - Meeting Tomorrow's Challenges. Leaders of prominent aviation and space education programs shared successful case studies and discussed topics on workforce development and implementation of education programs. The attendees included aviation and space education program managers of many organizations and agencies. Recently, Cook represented NCAE at Education Alley, part of Space 2005 in Long Beach, California. Education Alley was designed to get kids interested in math and science through events and exhibitor booths offering educational materials. NCAE members provided educational materials for students and teachers. About 1000 students and 100 educators went through Education Alley this year.

Another event Cook is involved in is the National Conference on Aviation and Space Education (NCASE). For many years Ken Cook Co. and NCAE have worked with CAP in planning NCASE. Along with planning, Ken Cook Co. is a sponsor of the conference. NCASE focuses on core subject areas with an emphasis toward hands-on, minds-on sessions applied to National Standards, Standards of Learning, and the No Child Left Behind Act. The conference gives educators the latest news and techniques for teaching a variety of subjects using aerospace themes.

Kenneth Cook and Ken Cook Co. have generously contributed to aviation and space education and will continue to fulfill these needs in future years. The aerospace education community thanks Ken Cook Co. for their commitment to the youth of our nation.

"We are all impressed with Ken's genial leadership style and his significant commitment of time and resources supporting this important work"

In the AEM spotlight... *Conita Gaines*

Conita Gaines has devoted not only her teaching career to promoting aerospace education, but also her retirement years. For ten years during her teaching career, she organized and coordinated a Young Astronaut Club for students in grades 2-8 in Aurora, Missouri. She started with four students and at the time of her retirement, the club had grown to 138 members with four teachers assisting. Some of the club's activities included funding 32 students to visit the US Space and Rocket Center in Huntsville, Alabama, and attending Young Astronaut Council conferences with her students in Florida, Texas and Washington, DC. In 1994, Conita received the Young Astronaut Council's "America in Space" educator award. She also received the Teacher of the Year award for Aurora Public Schools that same year.

After her retirement, Conita organized a new chapter of Young Astronauts in Springfield, Missouri. Club activities included a flight for students on a small private plane, a tour of the local airport, study of Global Positioning Systems, many hands-on activities and an annual awards ceremony/display night for students.



Conita has also coordinated ten conferences for adults and students relative to aerospace. She was co-creator of Aerospace Summit, an organization for adults interested in aerospace.

Conita believes that students are our hope for the future, and that aerospace is a wonderful way to motivate students. Her delight is

Conita ready for an aerospace reception



Conita Gaines at Astronaut Hall of Fame

reaching students by using aerospace to create interest in science and math. Her goal is assisting young people to achieve and to "Reach for the Stars" in whatever field they choose to pursue. As she says, "It is my lifetime joy to be privileged to assist students as they use aerospace and science activities to become excited and enthusiastic about learning!"

As a CAP Aerospace Education Member, Conita has used the educational materials to provide valuable "hands-on" activities, contests and information relative to flight, science and aerospace. She says that receiving CAP materials creates an enthusiasm that adds spark to the student club activities. Her students have been especially excited to work with their projects to win the Civil Air Patrol Aerospace Education Excellence Award.

Conita Gaines is truly an "aerospace ambassador" and gives inspiration to all those she comes in contact with. We thank her for her dedication and continued efforts to make aerospace "come alive" for young people.

Her club adopted a motto that explains their goals:

Only as high as I reach can I grow,
Only as far as I seek can I go,
Only as deep as I look can I see.
Only as much as I dream can I be.

"It is my lifetime joy to be privileged to assist students as they use aerospace and science activities to become excited and enthusiastic about learning!"



1st Lt Dorothy Christensen

Aerospace has been Dorothy Christensen's life since Jr. High when her class studied astronomy and she was hooked. 1st Lt Christensen has had experiences, jobs, and opportunities to share and perfect her skills in the aviation and space fields. She has a rich background that not only prepared her for a career, but also helped instill a passion for aerospace and education.

Dorothy Christensen was born in Salt Lake City, Utah and lived there until she was 20 years old. She attended South High in Salt Lake City and always enjoyed aviation and space as well as writing and music. After marriage, her husband was sent to Clovis, New Mexico when his unit of the Utah Air National Guard was called to duty. After his discharge, they moved to northern California.

After her first job in the aerospace industry with Lockheed Missiles and Space Company in Sunnyvale, Calif., 1st Lt Christensen moved to Los Angeles and worked for Aerojet General for a short time. She then took a job with Hycon Company developing high-altitude cameras. She flew 14 hours as a navigator in a B-25 during the testing of the cameras. After this experience, 1st Lt Christensen returned to Sunnyvale and spent the next 20 years at Lockheed writing proposals for new business, working on the space shuttle tiles, managing subcontractors, and performing cost analysis for various satellite systems. Since retirement, Dorothy Christensen has been a free lance writer.

1st Lt Christensen joined CAP in 1982 and was appointed Assistant Director of Aerospace Education (DAE) for California Wing.

Dorothy Christensen and cadet.



Dorothy Christensen and cadets.

She was there for a few years and moved to Group 2. For a short time, she was inactive but remained a member. Upon moving to Salt Lake City in June of 2002, she resumed her involvement in the aerospace education program and became DAE for Utah Wing in January 2003.

Dorothy Christensen says her first love is flying and she imparts this love to others by doing such activities as Fly A Teacher. The Utah Wing held a Fly A Teacher Workshop on 13 Aug 2005. Teachers from Northern Utah Academy for Math, Engineering, and Sciences (NUAMES) participated in the workshop and orientation ride in CAP aircraft. 1st Lt Christensen said that the CAP pilots enjoyed the flights as much as the educators. Cadets also attended the workshop and spoke to the teachers about their CAP experience and what it has meant to their lives.

Dorothy Christensen said, "I hope the Fly A Teacher Program continues. Offering an orientation flight is a tremendous incentive for teachers to join CAP."

We wish Dorothy Christensen the best and with her dedication and passion for aerospace, we know she will continue to be a CAP "Everyday Hero."

*"I hope the Fly A Teacher Program continues.
Offering an orientation flight is a tremendous incentive
for teachers to join CAP. "*



New Opportunity for CAP Cadets!

GRANTS

The Aerospace Education Foundation (AEF) recently announced the winners for the summer grant cycle for CAP units.

They are:

- 45th Composite Sq, March ARB, CA
- 66th Composite Sq, Waipahu, HI
- Amelia Earhart Composite Sq, Yonkers, NY
- Boise Composite Sq, Boise, ID
- Campbell County Composite Sq, Hebron, KY
- Coastal Composite Sq, Virginia Beach, VA
- Condor Composite Sq, Perry, NY
- Edwards AFB Composite Sq, Edwards AFB, CA
- J.P. O'Connor Composite Sq, Peru, NY
- Medina County Skyhawks, Wadsworth, OH
- Nebraska Wing Encampment, Bellevue, NE
- Niagara Falls Composite Sq, Niagara Falls, NY
- Oakhurst Composite Sq, Bay Pines, FL
- Prince William Composite Sq, Centreville, VA
- New York City Group, New York, NY
- Selfridge Cadet Sq, Macomb, MI
- Sioux Falls Composite Sq, Sioux Falls, SD
- South Dakota Wing, Sioux Falls, SD
- Tehachapi Composite Sq, Tehachapi, CA
- Utica Composite Sq, Marcy, NY

Congratulations to all who applied and remember to submit your Recipient Response form to let AEF know how important they have been to your program.

In memory of Robert Rice Brewer, a decorated soldier in WWII who died in a German POW camp in 1945, this scholarship is offered to four CAP Cadets who meet the eligibility criteria. The four full scholarships, sponsored by the Brewer Family and the Experimental Aircraft Association (EAA), allow the recipients to participate in the EAA Aeroscholars on-line Aviation Science course. This course offers two college credits and an option toward high school science elective as well as many other opportunities for the Cadet. This is the first year of this scholarship and the winners are: C/2ndLt Jacob B. Bush, C/CMSGT Nicole R. Anderson, C/Capt Katie L. Broyles, and C/Capt Nicholas S. Mogavero. Congratulations to these outstanding cadets.

To find out more about this scholarship and future deadlines, go to the AE website at www.cap.gov/ae and look for information on the home page.



Cadet winners of Robert Rice Brewer Award for 2005 from left: C/2ndLt Jacob B. Bush; C/Capt Katie L. Broyles; C/CMSGT Nicole R. Anderson; and C/Capt Nicholas S. Mogavero (not shown).



"I have attached a file with the pictures of my students with the glove boxes. This is our last week of school so we will continue to work on this when school starts in August. Thank you again for the grant!!"

Another Grant Opportunity

The Aerospace Education Foundation (AEF) is offering a grant program in addition to our regular CAP grants. This grant is also for \$250 and is for educators in classrooms from kindergarten through twelfth grades.

AEF has the funds to offer more than 100 grants, so your chances of receiving a grant are very good. Click on www.aef.org/aid/educator.asp to read the guidelines and download the application.

Please note that you need your local Air Force Association contact's signature on the application. If you need assistance contact Jeff Montgomery at jmontgomery@cap.gov. AEMs are urged to take advantage of this wonderful opportunity.



REGION TO REGION

NORTHEAST REGION

No events for Nov-Dec.

Check out the Northeast Region Aerospace Education page at <http://ner.cap.gov/ae/index.htm>

MIDDLE EAST REGION

November 19

The National Air and Space Museum in Washington, DC will present a family day and feature SpaceShipOne on display. Find out about this event by going to www.nasm.si.edu/events/eventDetail.cfm?eventID=382

GREAT LAKES REGION

November 12-13

Paper Airplane Weekend with Ken Blackburn will be held at the AirVenture Museum in Oshkosh, Wisconsin. For more, go to www.airventuremuseum.org/activities/events.asp

SOUTHEAST REGION

December 1-3

National Science Teachers Association (NSTA) will hold its Southern Area Convention in Nashville, Tennessee. For more information, go to www.nsta.org/conventiondetail&Meeting_Code=2005NAS

NORTH CENTRAL REGION

No events for Nov-Dec.

Check out the North Central Region web page at <http://ncr.cap.gov/cgi-bin/index.cgi>

SOUTHWEST REGION

November 5-6

The Randolph AFB 75th Anniversary-Airshow with Thunderbirds display will be held at Randolph AFB, Universal City, Texas. For more information, go to www.randolph.af.mil
January 13-15, 2006
The Texas Council of Elementary Science will hold

its 8th Annual Leadership Symposium at McKinney Roughs Nature Park between Austin and Bastrop, Texas. For further information, watch the website at www.statweb.org/TCES/

ROCKY MOUNTAIN REGION

No events for Nov. - Dec.

Check out the Rocky Mountain Region Aerospace education page at www.rmr.cap.gov/ae.html

PACIFIC REGION

November 5

Air Force Day at Evergreen Aviation Museum will take place in McMinnville, Oregon. For additional information, go to

www.sprucegoose.org/

November 5

The Jacqueline Cochran Regional Airport Air Show will be held in Thermal, California. For more, go to

www.jacquelinecochranairshow.org/default.asp

December 26

The Museum of Flight in Seattle, Washington is offering weekend family workshops for winter break. Daily flight activities include building and test flying the featured "Glider of the Day," making your own aviation art creations and much more. Check out the "news and events" for December at the Museum of Flight website at www.museumofflight.org

January 6-9, 2006

The 4th Annual Hawaii International Conference on Education will be held at the Renaissance Ilikai Waikiki Hotel in Honolulu, Hawaii.

For information, go to www.hiceducation.org/
January 12-14, 2006

The Association for Science Teacher Education will hold its 2006 International Conference in Portland, Oregon. To find out the latest, go to <http://aste.chem.pitt.edu/>

ITEMS OF INTEREST

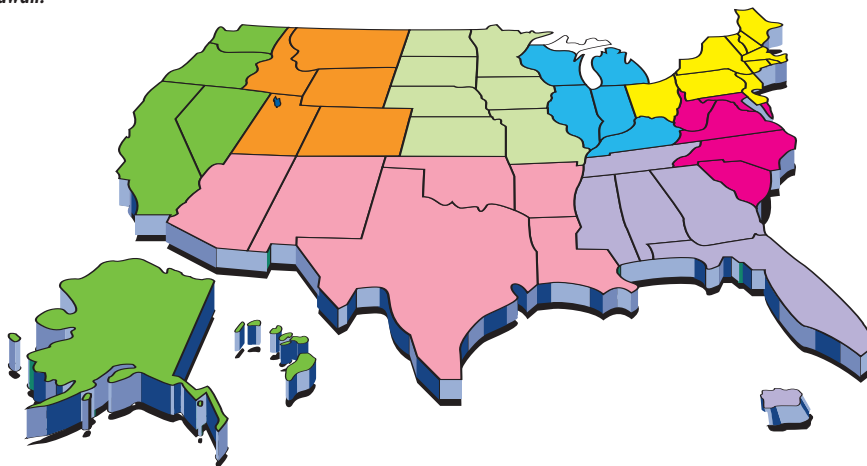
- AirMobile Aerospace Education Workshops brings the Science Museum of Virginia to you! These workshops are presented to students in grades 3-8 as well as educators seeking recertification and/or endorsement credit. For more information, go to

www.smv.org/prog/AirMobileinfo.html or contact the Aerospace Outreach Coordinator at (804) 864-1419 or email airmobile@smv.org

- November 16-18 - The National Air and Space Museum in Washington, DC observes National Geography Awareness Week from 10:00 am to 3:00 pm. For more information, go to www.nasm.si.edu/events/eventDetail.cfm?eventID=381

- Space: A Journey to Our Future is an exhibit which will tour major science centers around the country over four years. To find out about hosting the SPACE exhibit, please contact jeffreywyatt@clearchannel.com. To find out more about the host museum (Cincinnati Museum Center at Union Terminal), go to www.spaceexhibit.com/exhibit/exhibit.asp

- Team America Rocketry Challenge is sponsored by the Aerospace Industries Association and the National Association of Rocketry. To find out about rules, prizes and deadlines, go to www.rocketcontest.org



CURRICULUM CORNER... *Our Star - The Sun*

NASA AND NASAEXPLORES ACTIVITY

Objective:

Students will learn about the sun and how to safely observe it.

National Science Standards:

Content Standard D: Earth and Space Science

- Objects in the sky
- Unifying Concepts and Processes
- Evidence, models, and explanation

Grade Level: K-4

Materials:

- White, blue, yellow and red modeling clay
- Paper plates
- Toothpicks
- Paper
- Scissors
- Student sheets

For sunwatching part of activity:

- Binoculars
- White poster board
- Aluminum foil

Procedure:

1. Give the students some background on the sun such as:

The Sun is the closest star to the Earth. It is the most important part of the solar system. It holds all of the planets in their positions in space and sends out heat and light. If we didn't have the Sun exactly where it is, we couldn't live on Earth.

The Earth is made up of different layers. Well, the Sun is like that, too. The Sun has nine different layers. The center of the Sun is called the core, just like the center of the Earth. The Sun's core is a scorching 15 million degrees Celsius.

The surface of the Sun is called the photosphere. It is a lot cooler than the core and is 6,000 degrees Celsius. Even though it is cooler than the core, the photosphere is 60 times hotter than boiling water.

Sometimes the Sun has storms. These

storms shoot off big explosions called solar flares. Solar flares are giant jets of shooting gases. They can hit the Earth going more than 500 times faster than a speeding bullet. But, there is nothing to be worried about; these storms happen often. In fact, there is a constant stream of particles, the solar wind, coming from the Sun all the time. The Earth's magnetosphere deflects most of this and protects the Earth.

It's hard to imagine that our Sun is really a star. When we look up at the sky at night and see the stars, they look different than the Sun. That is because they are so much further away than the Sun. If we were very far out in space and looked back toward our Sun, we would think it was just a star like all of the other stars.

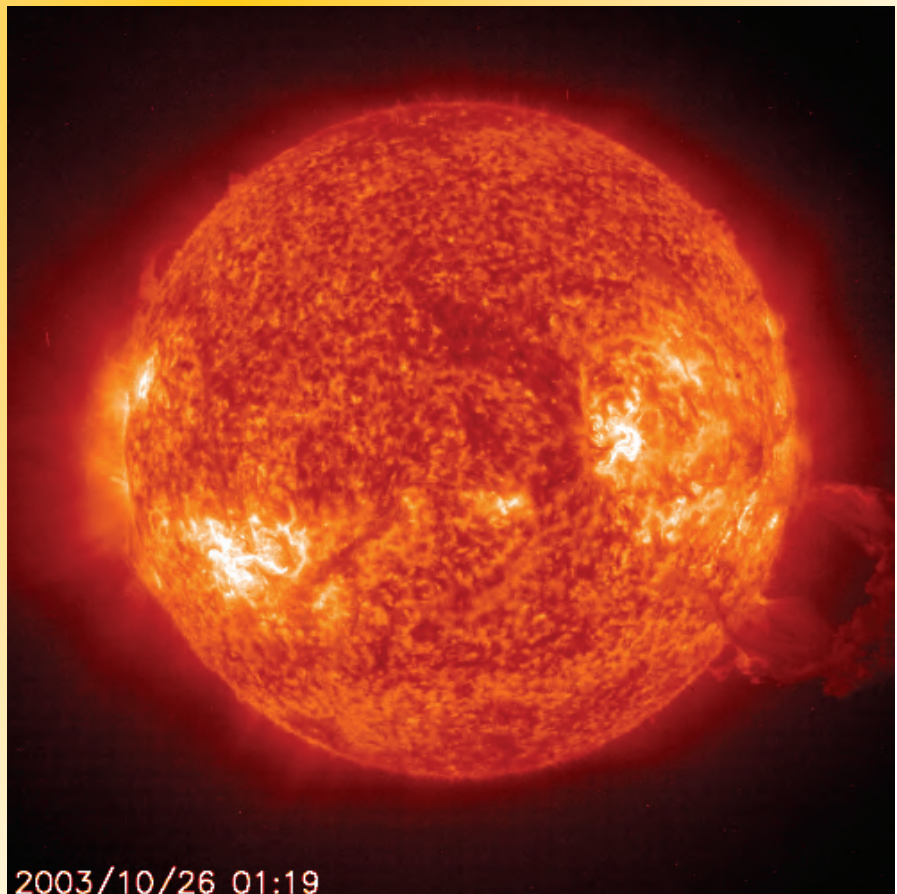
2. Give the students a copy of the Student Sheet that gives the descriptions of the Sun's layers and

read them.

3. Distribute the clay. Show students how to mix the clay to get other colors. Direct students to start with a marble sized ball of white clay which will represent the core. From there, they may mix their clays and use them to form the other layers of the sun.

4. After the students have completed their models, carefully cut away a wedge so that the inner layers show. Do not cut through the cores; leave them intact.

5. Have students use the paper to make labels for each of the layers. Have them attach the strips to the toothpicks and place them in the correct layers.



Below: Large Solar Flare on our Sun. Courtesy of SOHO/[instrument] consortium. SOHO is a project of international cooperation between ESA and NASA.



Our Star - The Sun (cont.)

Safe Sunwatching

Safety Tip: Never view the Sun directly with the naked eye or with any unfiltered optical device, such as binoculars or a telescope!

Method One Viewing:

If you want to view the Sun, your first concern should always be eye safety. Serious eye damage can result from even a brief glimpse of our star.

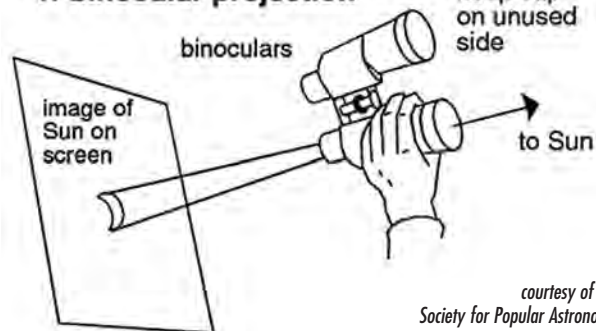
One safe way to observe sunspots or eclipses is to project an image of the Sun through a telescope or binoculars onto a white screen -- paper plates, walls, poster board or sidewalks all work nicely. If you're using a telescope, be sure that any small finder telescope is capped. If you're using binoculars, keep the cover on one of the two tubes. NEVER look through a telescope or binoculars to point them at the Sun -- partial or total blindness will almost surely result.

On the screen you should see a bright circle of light. This is the disc of the Sun. Adjust the distance between the screen and the telescope until the disk is about the size of a small paper plate. The image will probably be blurred; focus your telescope until the circle becomes sharp. Using this method you can see considerable detail in and around sunspot groups.

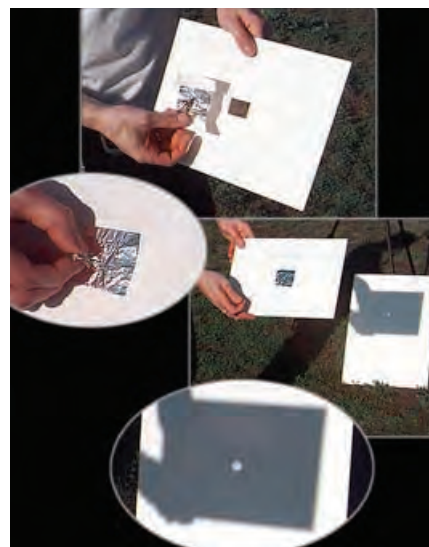
Method Two Viewing:

Get two pieces of cardboard -- one white piece to use as a projection screen. Cut a square in one cardboard, then tape a piece of foil over the square. Now make a pinhole in the middle of the foil. With the sun behind you, hold the pinhole cardboard as far from the white cardboard as you can. Remember, the farther you are from the screen, the bigger your image.

1. binocular projection



courtesy of the
Society for Popular Astronomy



Parts of the Sun

1. Core: This is the center layer of the Sun. This is where all the Sun's heat and light is made.

2. Radiative Zone: The heat and light move from the core into this layer.

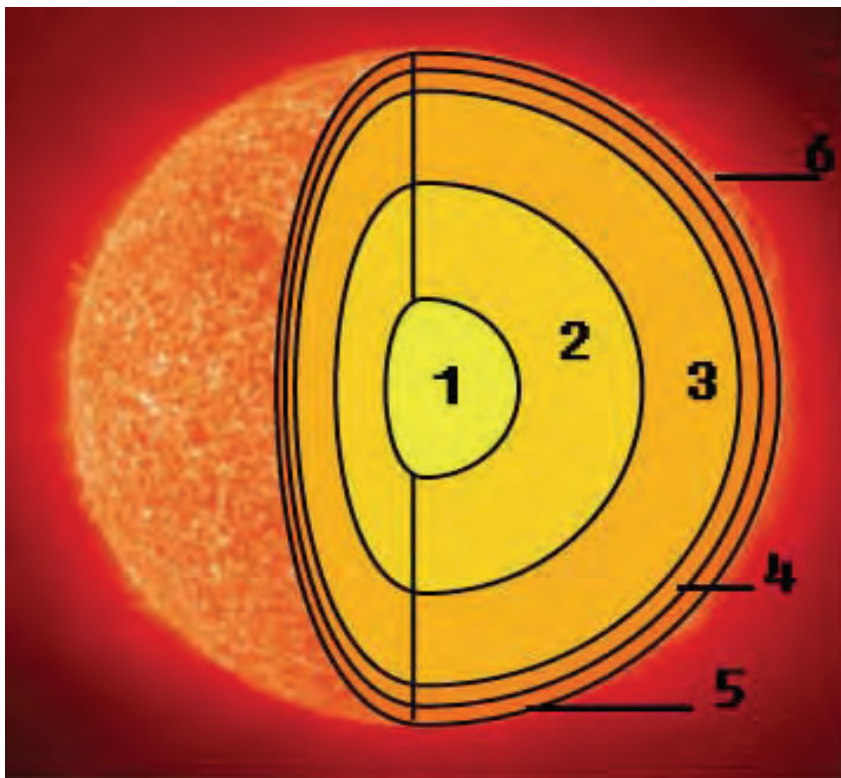
3. Convection Zone: In this layer, the gases move like boiling water. This moves them from the inner parts of the Sun to the outer part of the sun that we see.

4. Photosphere: This is the part of the sun we see. This layer gives off the heat and light from the Sun. The cooler parts of this layer make sunspots.

5. Chromosphere: This layer shoots out hot gases.

6. Corona: This layer can only be seen during an eclipse. It is the atmosphere around the Sun.

Draw a picture of your model and label the layers you created.



Evaluation: Students should be able to identify the layers of the Sun on the diagram. They should also be able to tell about the safety aspect of viewing the Sun.